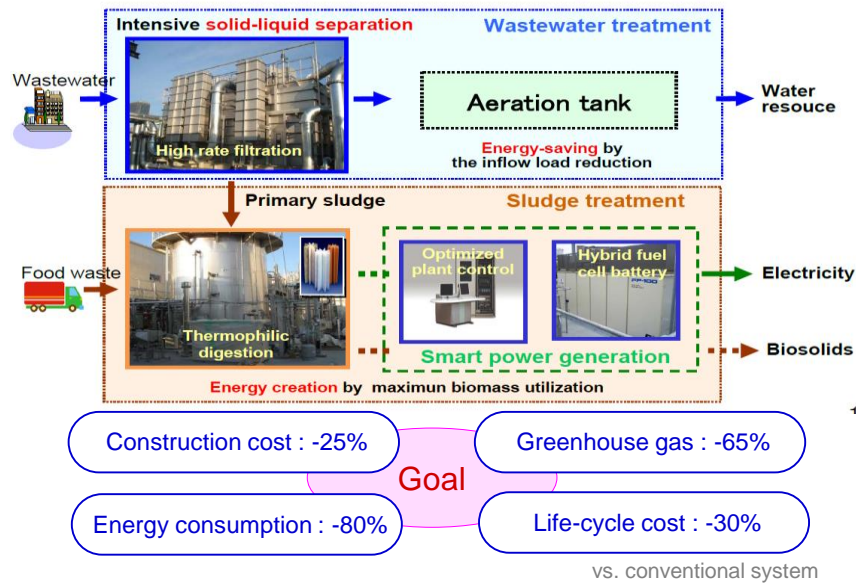




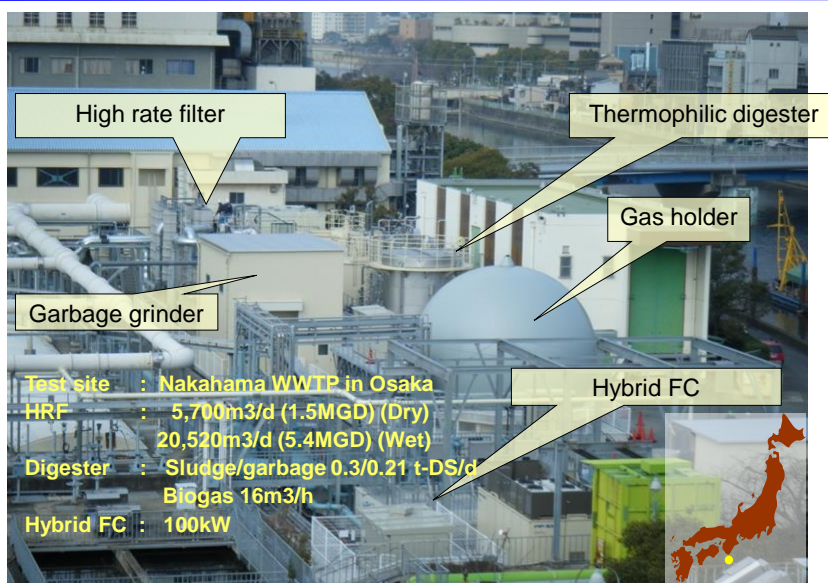
Outline of 23B-DASH Project

B-DASH : Breakthrough by Dynamic Approach in Sewage High Technology



## Demonstration Plant

METAWATER



The project, led by MLIT, was carried out in cooperation with Japan Sewage Work Agency.

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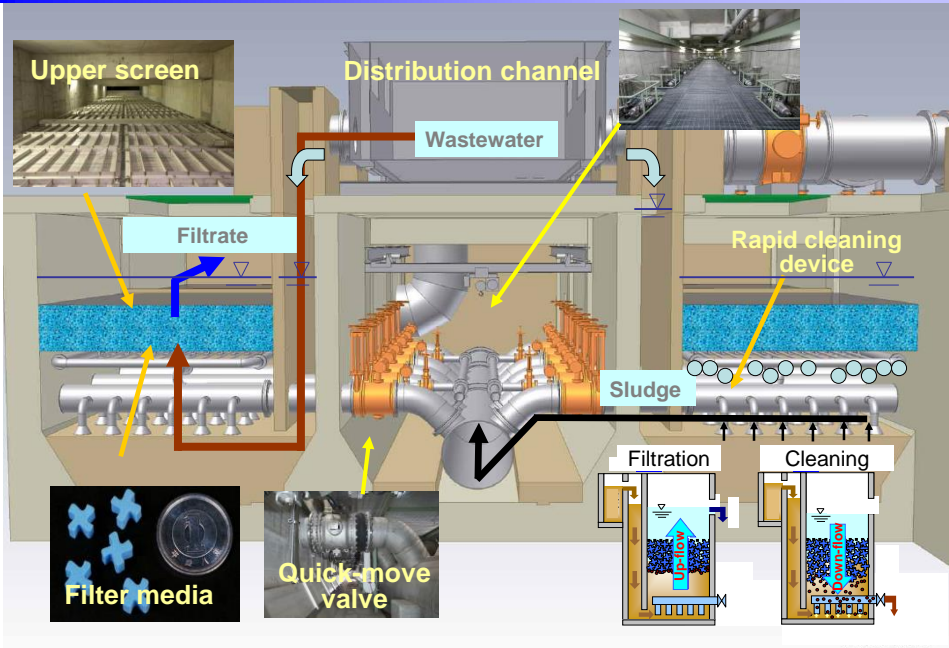
METAWATER

## High Rate Filtration System

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# High Rate Filtration System

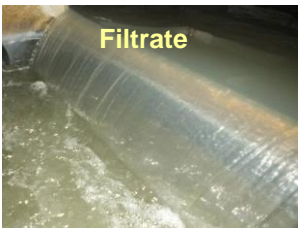
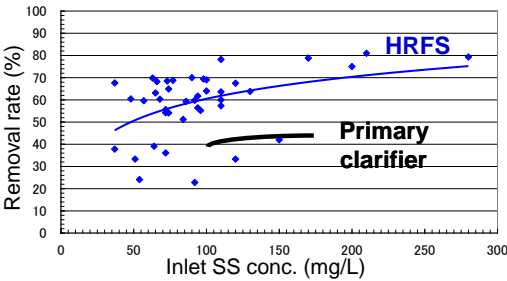
METAWATER



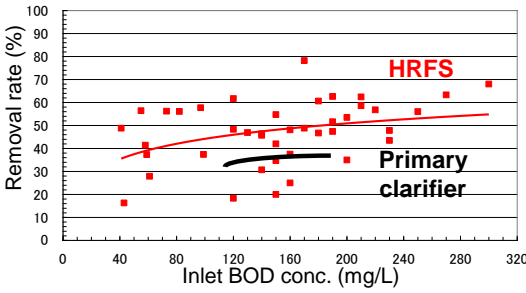
## Filter Performance

METAWATER

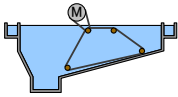
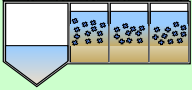
### SS removal rate



### BOD removal rate



## Comparison with Primary Sedimentation **METAWATER**

	Primary sedimentation		High rate filtration	
				
Treatment performance	Fair SS removal : 50 % BOD removal : 40 %		Good SS removal : 70 % BOD removal : 50 %	
Power consumption	100		100	
Overflow rate	50m/d (0.9gpm/ft <sup>2</sup> )		250 - 1,000m/d (4.3 - 17gpm/ft <sup>2</sup> )	
Footprint	100		35	
Added value	Other application	—	Primary clarifier alternative (250m/d)	
	Earthquake resistance	Poor Chain dislocation etc.	Fair Seismic-resistant structure (A primary clarifier can be converted to a HRF)	
Reference	Many		26 locations nationwide	

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**METAWATER**

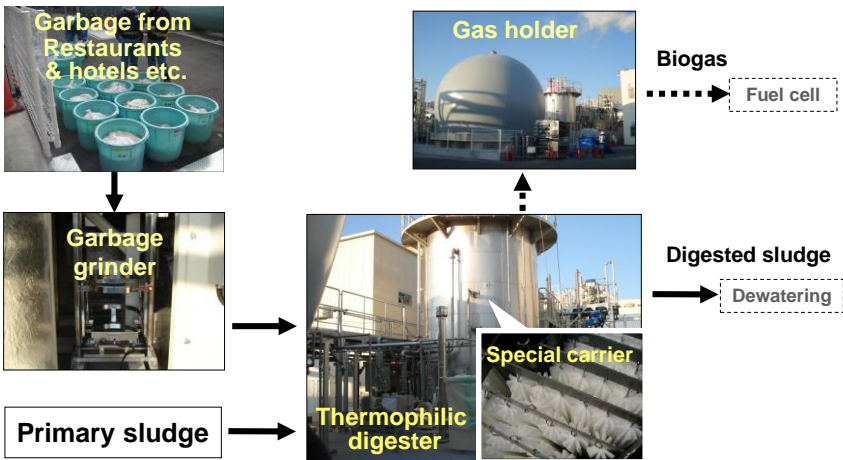
## Thermophilic Digestion

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# Thermophilic Digestion

METAWATER

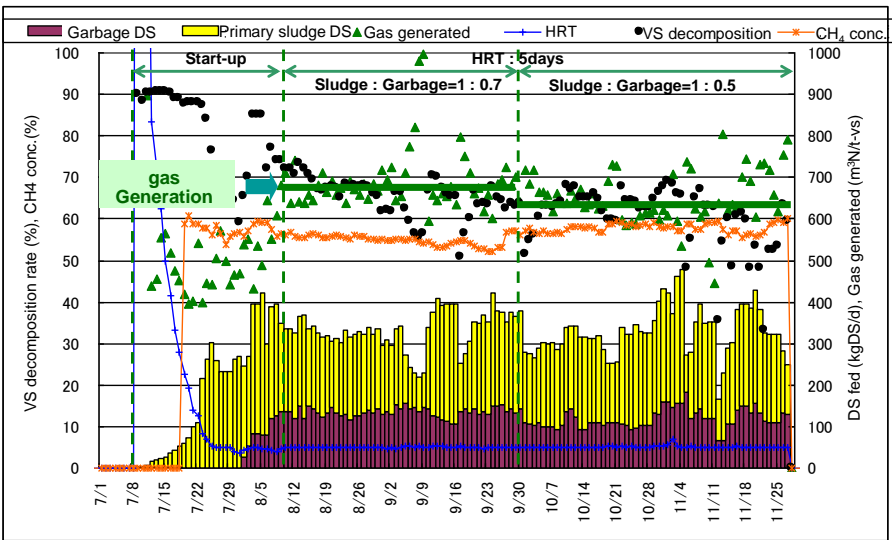
- Enhanced biogas production by co-digesting sludge and food waste
- Small footprint ··· Min. HRT 5days
- Durable against load fluctuation through special carrier



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# Digestion rate & Biogas Generation

METAWATER



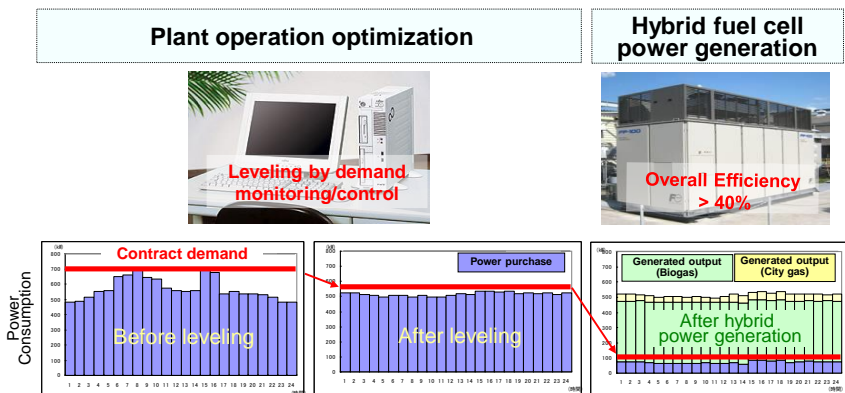
Stable digestion and gas generation and with short HRT

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# Smart Power Generation System

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## Smart Power Generation System



## Advantages

- 1) Power cost saving
  - Contract demand reduction by demand peak leveling
  - Full biogas utilization by supplementing with city gas
- 2) Power supply by FC using city gas in emergency/blackout

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# Hybrid Fuel Cell (100kW)



# Summary

## Expected Outcome



Finance	Power cost reduction <ul style="list-style-type: none"><li>- Enhanced power generation by co-digestion</li><li>- Aeration power saving by HRFS</li></ul>
Environ-ment	CSO/SSO countermeasure by HRFS GHG reduction by biosolid/biomass utilization
Safety	Disaster-resistant system <ul style="list-style-type: none"><li>- Enhanced primary treatment by HRFS in emergency</li><li>- Emergency power supply by Hybrid FC in blackout</li></ul>
Life	Possible disposer diffusion in the future <ul style="list-style-type: none"><li>- Enhanced SS recovery by HRFS</li></ul> MSW (Municipal Solid Waste) volume reduction

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Thank you for your attention.



Beyond engineering